Prepared for

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TMDL Wasteload Allocation Attainment Plan

In Support of San Luis Obispo County's SWMP

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1. INTRODUCTION

The Central Coast Regional Water Quality Control Board (Regional Board) requires that a Wasteload Allocation Attainment Plan (WAAP) be developed to supplement San Luis Obispo County's (County's) Storm Water Management Plan (SWMP) annual report. In accordance with the Regional Board requirements, the following WAAP has been developed for each applicable Total Maximum Daily Load (TMDL) within the County's jurisdiction. As a guide to the implementation of activities that will achieve TMDL wasteload allocations, this WAAP addresses: development of an implementation and assessment strategy; source identification and prioritization; best management practice (BMP) identification, prioritization, implementation, analysis, and assessment; monitoring program development and implementation; coordination with stakeholders; and other pertinent factors. Implementation of this plan and the BMPs described herein is designed to attain the appropriate wasteload allocations.

The four TMDLs addressed in this WAAP include: the San Luis Obispo Creek Nutrient TMDL, effective August 4, 2006; the San Luis Obispo Creek Pathogen TMDL, effective July 25, 2005; the Morro Bay Pathogen TMDL, effective November 19, 2003; and the Morro Bay Sediment TMDL, effective December 3, 2003. These four TMDLs have also been approved by the United States Environmental Protection Agency (EPA).

2. IMPLEMENTATION AND ASSESSMENT STRATEGY

Recognizing that a relatively large and varied coverage area is under the County's jurisdiction, the County relies heavily on public education and outreach and public participation and involvement to prevent pollution problems at the source. The SWMP seeks to employ the most cost effective means to achieve the objectives of the NPDES Phase II MS4 General Permit (Permit) and to coordinate stormwater runoff pollution prevention efforts throughout the County. The County's strategy relies on source controls and leveraging existing SWMP practices first, supplementing these in the future, where necessary based on monitoring results, to achieve TMDL objectives.

3. SOURCE IDENTIFICATION AND PRIORITIZATION

For each TMDL, sources of applicable pollutants of concern were identified through source analysis studies. These studies, whether commissioned or pre-existent, were aimed at targeting the leading causes, magnitudes, and locations of respective pollutant loadings. Data considered included water quality, flow, land use and other information. Relative pollutant source loads and best professional judgment were then used to prioritize the sources based on relative contribution to the receiving water impairment and anticipated controllability. A summary of each TMDL source assessment is

provided below, including discussion that is more focused on County MS4 sources specifically. Additional source assessment details can be found in the TMDL staff reports or the referenced studies. For reference, a map of the County unincorporated coverage areas (per the Permit), is shown in Figure 1. Within the San Luis Obispo Creek and Morro Bay watersheds, only the urban fringe around the City of San Luis Obispo and the community of Los Osos/Baywood Park are included.

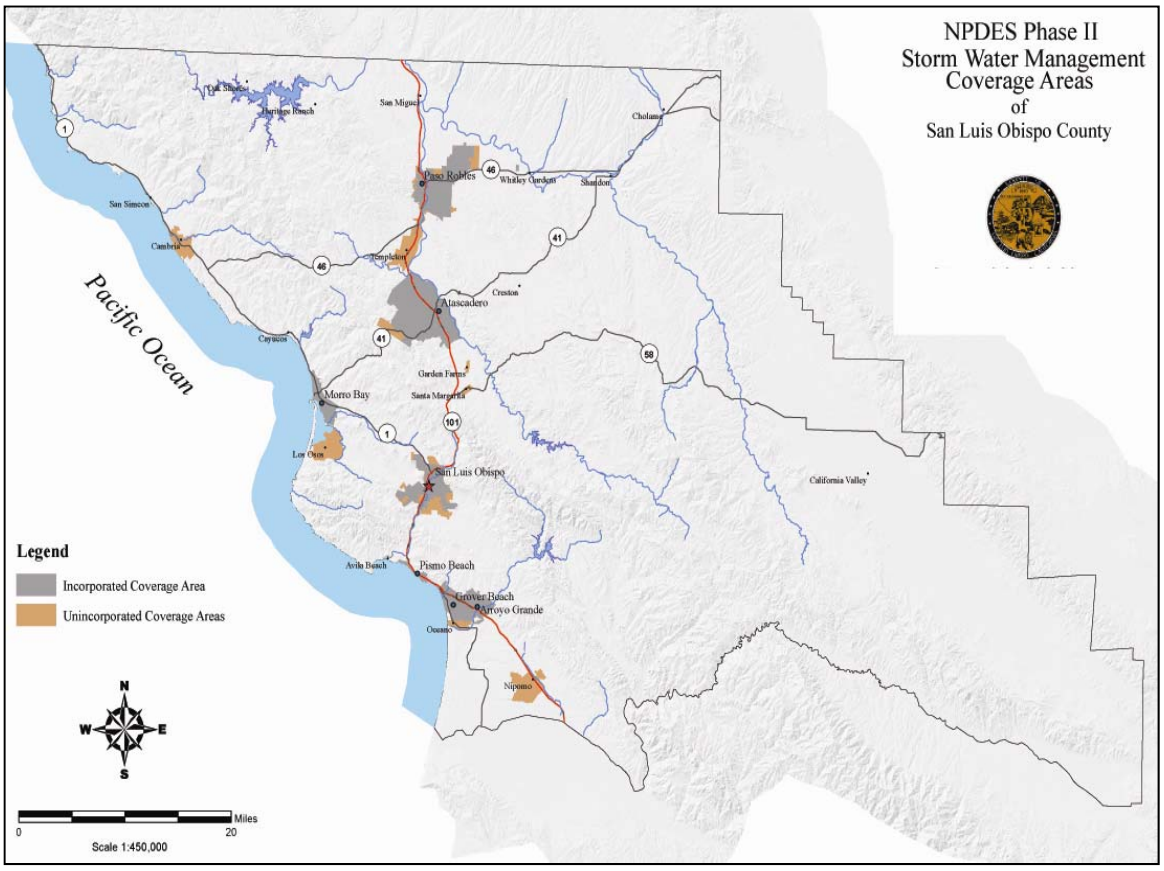

Figure 1. Map of County Unincorporated Coverage Areas

3.1 San Luis Obispo Creek Nutrient TMDL

Source data was collected by Regional Board staff between March 2001 and March 2002. This monitoring effort utilized 41 sites throughout the San Luis Obispo Creek watershed, including 15 on the main stem of the Creek. These sites were established upstream and downstream of major tributaries as well as upstream and downstream from known and suspected sources. In addition, data from the City of San Luis Obispo's Creek Monitoring Program were utilized for source identification. This program monitors 7 locations along the main stem of the Creek as well as effluent from the City's Water Reclamation Facility (WRF) from April through November each year.

Main stem water quality data was used to determine where significant increases in nitrate-N levels occurred along the channel. Data were tabulated and graphed as a function of distance upstream from the mouth. Notable increases in nitrate-N concentration were then tested for significance using statistical software. Statistical tests compared nitrate-N concentrations of sites where an increase was evident to the site immediately upstream. The analysis aided staff in determining where significant nitrate-N sources were located.

Coupling this data with land uses in the watershed, source categories were identified and total and relative nitrate loading was estimated. Table 1 summarizes the annual nitrate-N contributions by source category throughout the watershed.

Table 1: San Luis Obispo Creek Nitrate Contributing Sources

Source	Relative NO3 Contribution (%)
Point Source Load (WRF)	72
Croplands	28
Background	0.42
Reservoir	0.05
Residential	0.02
Confined Animal	0.00

According to the source analysis, the primary contributor to nitrate-N loading in the main stem of the Creek is the City of San Luis Obispo WRF, which raised the median nitrate-N concentration of the Creek from 0.95 mg/L-N immediately upstream of the WRF discharge to 15 mg/L-N immediately downstream of the discharge. The secondary source, runoff contributions from croplands, appears to be relegated to two subwatersheds, Stenner Creek and Prefumo Creek, which drain City and County land. The other source categories were found to not contribute a measurable (statistically significant) amount of nitrate-N to the Creek concentration.

The TMDL prioritizes WRF and agricultural sources in Prefumo Creek, neither of which is under the County's MS4 jurisdiction. County sources, which constitute a minor fraction of total nutrient loads in the watershed, are pet wastes and fertilizers from residential areas upstream of the City of San Luis Obispo (City) in the upper Stenner and Prefumo watersheds. These sources will be addressed through implementation of pet waste and fertilizer source control BMPs, which are intended to reduce MS4 contributions to receiving water nitrate concentrations. This nutrient load reduction is then also expected to provide a bacteria reduction benefit to San Luis Obispo Creek

since studies on urban streams have indicated that indicator bacteria are positively affected (i.e., regrowth is facilitated) by elevated nutrient levels (Surbeck et al., 2010).

3.2 San Luis Obispo Creek Pathogen TMDL

Regional Board staff began collecting total and fecal coliform data throughout the watershed beginning in March 2001. Sampling continued until April 2003, resulting in 394 samples collected from 21 sites throughout the Creek main stem and tributaries. Results showed fecal coliform concentrations to be highest in the downtown area of the City, particularly downstream of the 1200 foot long tunnel that runs under the downtown area. Immediately downstream of this tunnel, the discharged WRF (disinfected) effluent was found to lower fecal coliform concentrations in the Creek. Upstream of the downtown area, the Stenner Creek watershed was determined to contribute only a small load of fecal coliform to the Creek. Therefore, the downtown tunnel and the San Luis Obispo Creek watershed upstream of the City were determined to be the main contributors of fecal coliform to the Creek.

In June of 2002, DNA fingerprinting analysis using a ribotyping method was used to identify sources of fecal coliform within the watershed. 27 samples were taken at 3 locations along the main stem of the Creek near the tunnel. Combining these results with water quality data, flow data, and land use information, source contributions were estimated. The estimated relative source contributions are summarized in Table 2.

Table 2. San Luis Obispo Creek Pathogen Contributing Sources

Source	Relative Fecal Coliform Contribution (%)
Urban (dogs, cats, nonpoint source human)	46
Human (leaking sewer laterals, illicit connections, or other point sources)	27
Tunnel Birds & Bats (TBB)	14
Livestock	7
Background	6

The three primary sources of fecal coliform loading to the Creek are urban, human, and TBB sources, particularly in and upstream of the downtown tunnel. The urban source refers to sources originating in urban areas, including sources conveyed through storm drain conduits. This category includes coliform originating from pets (e.g., dogs and cats), as well as human waste not originating from point sources (referred to as a Combined Sewer Overflow [CSO] source despite CSOs not being utilized in San Luis Obispo). The human source category refers to fecal coliform originating from potentially leaking private sewer lateral lines, illicit connections, or any other human

source potentially entering the creek as a point source. The TBB fraction is a source category specific to San Luis Obispo Creek. This category refers to fecal contamination from animals that have populated an area in unusually high density. Specifically, this category refers to the tunnel area, where birds and bats are provided roosting habitat resulting in high population densities. The background fraction was developed based on samples from relatively undisturbed reference sites in the watershed. Although these results acknowledge the significance of natural sources of indicator bacteria consistent with findings from other recent reference watershed studies (SCCWRP, 2008), the TMDL WLAs do not account for natural sources in the form of allowed exceedance days (or concentrations/loads above the REC-1 water quality objective) that are based on background contributions.

Consistent with findings from the TMDL, the County will prioritize control measures that address urban sources (e.g., pet wastes) and human sources (e.g., septic systems and illicit discharges) within the County MS4 areas upstream of the City in the San Luis Obispo Creek watershed.

3.3 Morro Bay Pathogen TMDL

Ten years of fecal coliform data was collected through the National Monitoring Program (1993-2001) and the University of Cal Poly San Luis Obispo (Cal Poly, 2002). Results indicate portions of Chorro Creek and Los Osos Creek, which both drain to Morro Bay, to have fecal coliform concentrations above the single sample body contact recreation (REC-1) objective of 200 MPN/100 mL at least half the time, with greatest concentrations observed during wet weather. Partly as a consequence, Morro Bay fecal coliform values were found to regularly exceed the monthly geometric mean shellfish harvesting (SHELL) objective of 14 MPN/100 mL. Recent analyses by Southern California Coastal Water Research Project (SCCWRP) researchers (SCCWRP, 2009) have shown that frequent SHELL objective exceedances are not uncommon for coastal waters throughout California, even at reference beach sites at the outlet of undisturbed watersheds, given the very low SHELL objective value relative to natural coastal bacteria levels.

Besides Chorro and Los Osos Creeks, another constant input to the Bay are surfacing groundwater sites (seeps) on the Bay shoreline of the community of Los Osos. Sampling from these seeps indicates high concentrations of fecal coliform almost always above REC-1 objectives during periods of both wet and dry weather (Cal Poly, 2002).

The major sources of bacteria in the Morro Bay watershed were suspected to be (1) background, which includes bird, wild animals and sea mammals; (2) non-point

sources, which include humans, septic systems, agricultural runoff, cattle and other farm animals, and domestic pets; and (3) point sources, which include MS4s and sanitary sewer overflows (from the City of Morro Bay or the California Men's Colony wastewater treatment plants. Although the TMDL source assessment does acknowledge the significance of natural sources of indicator bacteria consistent with findings from other recent reference watershed studies (SCCWRP, 2008), the TMDL WLAs do not account for natural sources in the form of allowed exceedance days (or concentrations/loads above the REC-1 water quality objective) that are based on background contributions.

DNA fingerprinting of *E. coli* (a subset of fecal coliform) was conducted by Cal Poly and University of Washington researchers from 1999 through 2001 (California Polytechnic State University, et al., 2002.). When results were summed over the entire study the largest fractions of *E. coli* came from four sources: bird (22%), human (17%), bovine (14%) and dog (9%). Birds were the largest source of *E. coli* in the bay waters, Los Osos Creek, 3rd St. Dock seep, sediment and oysters. Bovine sources contributed the majority of *E. coli* in Chorro Creek and humans contributed most at the Pismo Seep in Los Osos.

Primary contributing sources – including agriculture and rangeland runoff, sanitary sewer overflows, and natural sources such as birds, wildlife and marine mammals – are not under the County's jurisdiction. The primary contributing sources of fecal coliform within the County's jurisdiction are failing/leaking septics and groundwater seeps in the Los Osos community. The County believes that bacteria loading due to septic failures and discharges from sewage disposal systems will be significantly reduced with the implementation of the Los Osos Wastewater Project (LOWWP). Since the County initiated work pursuant to AB2701, project funding has been substantially secured for the LOWWP, which has been designed to consist of a collection system, treatment facility, recycled water reuse program, and conservation program. The project draft EIR was released in November 2008, and the final EIR was adopted by the County Board of Supervisors on September 29, 2009. The County has also applied for all state and federal environmental permits. The County is currently waiting for final issuance of key permits, including the Coastal Development Permit, before proceeding with final design or project bids. Consistent with findings from the TMDL, along with addressing septics in the community of Los Osos, the County will prioritize BMPs which address pet waste and illicit discharges within the County's jurisdictional areas in these watersheds.

3.4 Morro Bay Sediment TMDL

Source analysis was conducted to characterize types, magnitudes, and locations of sources of sediment loading to Morro Bay and to Chorro and Los Osos Creeks according to land use categories, erosion categories, and subwatersheds. Rough RUSLE-based sediment yield estimates were made by Tetra Tech (1998) and the Soil Conservation Service (SCS, 1989).

Contributing land uses were found to include rangeland, brushland, woodland, cropland, and urban, due to grazing, row crop and land development activities (e.g., roads, construction). Erosion categories included sheet and rill, streambanks, roads, and gullies. Sheet and rill contributed the most sediment by erosion category. The Chorro and Los Osos Creeks subwatersheds were estimated to deliver an average of approximately 70,000 tons per year of sediment to the estuary. The Chorro Creek watershed was estimated to contribute 86 percent of the total sediment produced in the Morro Bay watershed. These subwatersheds contain the vast majority of the upland areas of the Morro Bay watershed. Areas of steepest slope and highest rainfall intensity within these watersheds were noted to be the most significant sources of sediment loading to Morro Bay.

The TMDL staff report describes the vast majority of sediment loading in the watersheds to derive from non-point sources. County MS4 sources, such as roads, contribute sediment to a lesser degree. The County will therefore prioritize road maintenance and construction BMPs for addressing these sources.

4. BMP IDENTIFICATION

In order to reduce stormwater pollutants in receiving waters to the “maximum extent practicable” (MEP), Best Management Practices (BMPs) are required. According to the Phase II MS4 general permit, these BMPs must be developed and implemented following six Minimum Control Measures: 1) Public Education and Outreach; 2) Public Participation and Involvement; 3) Illicit Discharge Detection and Elimination; 4) Construction Site Runoff Control; 5) Post-Construction Stormwater Management; and 6) Pollution Prevention/Good Housekeeping for Municipal Operations.

In the SWMP, the County has identified the following BMPs which pertain directly to the reduction of the pollutants of concern addressed in the four approved TMDLs. For a detailed description of each BMP, see Tables 4.1 through 4.6 in the SWMP.

Table 3. Identified BMPs for each TMDL

San Luis Obispo Creek Pathogen TMDL		
BMP as Cited in TMDL	**Discussion as Cited in TMDL**	**Applicable BMP**
"Public Education and Outreach"	"Educate the public regarding sources of fecal coliform and associated health risks of fecal coliforms in surface waters. Educate the public regarding actions that individuals can take to reduce loading."	BMP PE5 Printed Materials targeting residential audiences BMP PE10 Educational Programs for School Age Children BMP PE11 College Students BMP PE12 Tourists BMP PE18 Pet waste management public education and outreach campaign
"Pet Waste Management"	"Develop and implement enforceable means (e.g. an ordinance) of reducing/eliminating fecal coliform loading from pet waste."	BMP IL11 Adopt and enforce a Pet Waste Management Ordinance* BMP PE18 Pet waste management public education and outreach campaign
"Illicit Discharge Detection and Elimination"	"Develop and implement strategies to detect and eliminate discharges (whether mistaken or deliberate) of sewage to the Creek."	BMP IL1 IDDE Ordinance* BMP IL3 Citizen reporting hotline BMP IL4 Illicit connections/discharge inspections BMP IL6 Sanitary Sewer Overflow Prevention and Spill Response Program BMP IL7 Septic system management program
"Post-Construction Stormwater Management in New Development and Redevelopment"	"Develop and implement strategies to reduce/eliminate fecal coliform loading from streets, parking lots, sidewalks, and other urban areas potentially collecting and discharging fecal coliform to the Creek."	BMP PC3 Post-construction stormwater management included in development review BMP PC4 On-site inspections and self-certification requirements BMP PC5 LID design standards manual BMP PC7 LID incentive program
"Pollution Prevention and Good Housekeeping"	"Develop and implement strategies to reduce/eliminate fecal coliform loading from streets, parking lots, sidewalks, and other urban areas potentially collecting and discharging fecal coliform to the Creek."	BMP MO2 Street sweeping program BMP MO 3 Storm drain cleaning and inspection BMP MO6 Facility inspection program
San Luis Obispo Creek Nutrient TMDL		
BMP as Cited in TMDL	**Discussion as Cited in TMDL**	**Applicable BMP**
"Reduce nutrient loading to San Luis Obispo Creek from residential sources"	"Implement management practices consistent with and required by small MS4 permits for residential sources of nutrients."	BMP PE5 Printed materials targeting residential audiences including proper use of fertilizers and septic system maintenance BMP PE18 Pet waste management public education and outreach campaign

Morro Bay Pathogen TMDL		
BMP as Cited in TMDL	**Discussion as Cited in TMDL**	**Applicable BMP**
"Pet Waste Management"	"Create an off leash dog park, provide supplies to pick up pet waste, ordinance." (NOTE: The County operates an off leash dog park at El Chorro Regional Park in the Morro Bay watershed)	BMP IL11 Adopt and enforce a Pet Waste Management ordinance.* BMP PE18 Pet waste management Ordinance public education and outreach campaign which includes mutt mitt stations in County Parks
"Septic system maintenance"	"Inspect and maintain all septic systems throughout the watershed."	BMP IL1 IDDE Ordinance* BMP IL3 Citizen reporting hotline BMP IL4 Illicit connections/discharge inspections BMP IL6 Sanitary Sewer Overflow Prevention and Spill Response Program BMP IL7 Septic system management program
"Post-Construction Stormwater Management in New Development and Redevelopment"	"Develop and implement strategies to reduce/eliminate fecal coliform loading from streets, parking lots, sidewalks, and other urban areas potentially collecting and discharging bacteria to the Bay."	BMP PC3 Post-construction stormwater management included in development review BMP PC4 On-site inspections and self-certification requirements BMP PC5 LID design standards manual BMP PC7 LID incentive program
"Spay/neuter pets"	"Educate the public to promote spaying and neutering pets."	BMP PE18 Pet waste management campaign including spay/neuter programs.
"Reduce the number of feral dogs/cats"	"Reduce the number of feral dogs/cats"	BMP PE18 Pet waste management campaign including programs for feral cats and dogs
Morro Bay Sediment TMDL		
BMP as Cited in TMDL	**Discussion as Cited in TMDL**	**Applicable BMP**
"Road Maintenance"	"Increase the use of management measures for road maintenance and construction."	BMP MO3 Storm drain inspection and maintenance BMP MO5 County road and bridge maintenance procedures
"Stormwater Sediment Controls on Roads"	"Include specific road sediment control measures in County stormwater management plan."	BMP MO2 Street sweeping program BMP MO5 County road and bridge maintenance procedures BMP CON1 County grading ordinance
"Construction Projects"	"Increase the use of management measures for road maintenance and construction."	BMP CON1 County grading ordinance BMP CON3 Construction site inspections and runoff control requirements BMP CON4/PE8 Public education and outreach for construction runoff controls

"Post-Construction Stormwater Management in New Development and Redevelopment"	"Develop and implement strategies to reduce/eliminate sediment loading from streets, parking lots, sidewalks, and other urban areas potentially collecting and discharging sediment to the Bay."	BMP PC1 Adoption and enforcement of revisions to the County Land Use Ordinances (Titles 22 and 23) BMP PC2 Revisions to CEQA initial study checklist BMP PC3 Post-construction stormwater management included in development review BMP PC4 On-site inspections and self-certification requirements BMP PC5 LID design standards manual BMP PC7 LID incentive program BMP PC9 Update Conservation Element of the General Plan

* Upon adoption of the illicit discharge ordinance per BMP IL1, the County was sued. In addition, the pet waste ordinance was founded on the illicit discharge ordinance, so until litigation is complete, both ordinances are stalled.

5. BMP PRIORITIZATION

As a first step for the County's BMP prioritization for this TMDL WAAP, the SWMP BMPs were screened down to only those that addressed the TMDL pollutants of concern. Next, best professional judgment was applied to select those BMPs that were expected to be most effective (in term of long term pollutant reduction) and comprehensive (in terms of covering a range of MS4 sources). These prioritized BMPs included any that directly addressed the prioritized County pollutant sources discussed earlier in section 3. Where gaps were identified between the prioritized BMP suite and the prioritized sources, BMPs were added to address these and the SWMP was revised accordingly. This situation applied with the Los Osos septics, which were identified as a significant source for the Morro Bay pathogen TMDL. Therefore a BMP was added (IL7D) for the County to manage the septic to sewer transition for this area.

6. BMP IMPLEMENTATION

The BMPs described in this WAAP are part of the County's broader SWMP efforts to meet the requirements for each Minimum Control Measure defined by the Permit. The proposed BMPs were selected because they are specific to the needs of the communities in the County, they protect and improve water quality, they are feasible based on the County's resources, and they are flexible to allow for continuous improvement over the course of the first five-year permit term.

Implementation of the SWMP, including this WAAP, will require that the County expend resources and staff time to ensure that the MEP requirement of the Permit is satisfied. The County will take advantage of existing water quality activities related to stormwater, particularly by partnering with community volunteer groups, County departments, and a coalition of other agencies to implement the SWMP. By building upon the combined effects of these activities, the County will be able to implement a more effective and efficient SWMP.

Table 4, condensed from the SWMP, identifies the implementation schedule for each BMP, milestones and measureable goals that will be used by the County to track and assess implementation efforts, and responsible departments within the County.

Table 4. BMP Implementation Table

	BMP ID	Measurable Goals and Outcomes	Implementation Timetable					County Implementers
			Permit Year					
			1	2	3	4	5	
Public Education	PE 5	PE5A: Distribute printed materials in all of the communities in the stormwater permit coverage area each year. Target to reach 90% of the households in the permit coverage area by Year 3 and again by Year 5.	X	X	X	X	X	Public Works Environmental Programs Division Stormwater Pollution Prevention Coordinator
		PE5B: Post brochures on the County SWP2 website	X	X	X	X	X	
	PE 8	PE8A: Distribute brochures with every building permit application for projects one acre or more in size	X	X	X	X	X	Department of Planning and Building Supervising Planner (Permit Center) with assistance from the Environmental Resource Specialist, the Public Works Solid Waste Coordinator and the Stormwater Pollution Prevention Coordinator
		PE8B: Distribute brochures to 100% of the General Contractors, builders, and Developers operating in the county by Year 3 and again by Year 5			X		X	
		PE8C: Post brochures on the County website	X	X	X	X	X	
	PE 10	PE10A: Distribute educational materials targeting grades 2-5, middle school science, and high school students for all schools within the coverage area at least once every three years. This translates to approximately 35% of the schools each year	X	X	X	X	X	Public Works Environmental Programs Division Stormwater Pollution Prevention Coordinator
		PE10B: Provide Sammy the Steelhead activity books for pre-school through grade 1 children	X	X	X	X	X	
		PE10C: Provide Sammy's Kid's club educational materials and activities for children pre-school through Grade 6.	X	X	X	X	X	
		PE10D: Provide Sammy the Steelhead educational appearances at public events for children	X	X	X	X	X	

	BMP ID	Measurable Goals and Outcomes	Implementation Timetable					County Implementers
			Permit Year					
			1	2	3	4	5	
Public Education	PE 12	PE12A: Distribute brochures to 100% of the hotels and local tourist attractions in the coverage area by Year 3 and again by Year 5 beginning in Year 1.	X	X	X	X	X	Public Works Environmental Programs Division Stormwater Pollution Prevention Coordinator
		PE 12B: Promote eco and sustainable agriculture tourism programs	X	X	X	X	X	
		PE12C: Provide interpretative stormwater pollution prevention signage in the top three high tourist impact areas in the permit coverage area				X	X	
	PE 18	PE18A: Provide educational materials and mutt mitt stations in all County Parks in the permit coverage area by Year 3. Maintain mutt mitt supplies on an ongoing basis			X	X	X	General Services County Parks Superintendent and Public Works Environmental Programs Division Stormwater Pollution Prevention Coordinator
		PE 18B: Adopt a pet waste ordinance including enforcement provisions by the end of Year 2. Publicize the pet waste ordinance on an ongoing basis		X	X	X	X	
		PE18C: Distribute pet waste management brochures with dog license renewals	X	X	X	X	X	
		PE18D: Distribute pet waste management brochures at animal shelters, pet stores, veterinarian offices, and farm supply stores in the permit coverage area		X	X	X	X	General Services County Parks Superintendent and Public Works Environmental Programs Division Stormwater Pollution Prevention Coordinator
		PE18E: Post pet waste management public education and outreach information on the County website	X	X	X	X	X	
		PE18F: Distribute pet waste management educational information to general residential audiences using radio and TV PSAs	X	X	X	X	X	
		PE18G: Promote humane society and other nonprofit organizations dedicated to trap, neuter, and release/adopt programs for feral cats and dogs	X	X	X	X	X	
		PE18H: Promote spay/neuter assistance programs to reduce feral cat and dog populations	X	X	X	X	X	
		PE18I: Provide pet spay/neuter educational materials and other information to promote responsible pet ownership through the Animal Services Division	X	X	X	X	X	
		PE18J: Promote the use of off leash dog parks in County parks	X	X	X	X	X	

	BMP ID	Measurable Goals and Outcomes	Implementation Timetable					County Implementers
			Permit Year					
			1	2	3	4	5	
Illicit Discharge Detection and Elimination	IL 1	IL1A: Ordinance to be drafted and adopted by Year 2 IL1B: Establish a system of enforcement and penalties and train inspectors IL1C: Track and trend annual enforcement reports. Violation types will be evaluated to measure effectiveness over time		X	X X	X	X	Public Works Environmental Programs Division Manager and Stormwater Pollution Prevention Coordinator
	IL 3	IL3A: Enhance the County's existing Environmental Health Services pollution complaint reporting line to include illicit discharge, illegal dumping, and construction site runoff citizen reporting. IL3B: Advertise the availability of the Stormwater Pollution Prevention hotline and provide instructions for how to report stormwater problems as part of the public education and outreach program IL3C: Record the number of stormwater reports and document follow up actions and problem resolution. Track and trend report types. Report results in annual report. IL3D: Measure and record hotline follow-up response times.	X X X X	X X X	X X X	X X X	X X X	Public Health Environmental Health Services Division Supervising Environmental Health Specialist, Hazardous Materials Section and Public Works Environmental Programs Division Stormwater Pollution Prevention Coordinator
	IL 4	IL4A: Develop and implement a procedure and checklist for detecting illicit connections and discharges. IL4B: Inspect for illicit connections and discharges during storm drain and cross-connection inspections. See MO3 IL4C: The enforcement and penalty provisions of the adopted ordinance in BMP IL1 will be implemented in permit years three through five IL4D: Train restaurant health inspectors in illicit discharge detection and elimination. 100% of restaurants will be inspected annually through the health inspection program. Health inspectors will report all stormwater violations to the Public Works Department for follow up. For violations that occur within the permit coverage area, the County must follow up on all reports, and include response actions and response times in the Annual Report.	X X	X X	X X X X	X X X X	X X X X	Public Works Road Operations Superintendent and Public Health Environmental Health Services Division Supervising Environmental Health Specialist, Hazardous Materials Section with assistance from the Stormwater Pollution Prevention Coordinator

	BMP ID	Measurable Goals and Outcomes	Implementation Timetable					County Implementers
			Permit Year					
			1	2	3	4	5	
Illicit Discharge Detection and Elimination	IL 4	IL4E: Train CUPA inspectors in illicit discharge detection and elimination. CUPA inspectors must report all stormwater violations to the Public Works Department for follow up. For violations that occur within the permit coverage area, the County must follow up on all reports, and include response actions and response times in the Annual Report IL4F: Establish a system of enforcement and penalties to ensure illicit connections and discharges are eliminated according to the adopted ordinance in BMP IL1. The enforcement and penalty provisions of the adopted ordinance described in IL1 will be implemented in permit years three through five. IL4G: Track and trend violations to determine additional preventive and corrective actions that may be needed. Report these results annually.	X X	X X	X X X	X X X	X X X	Public Works Road Operations Superintendent and Public Health Environmental Health Services Division Supervising Environmental Health Specialist, Hazardous Materials Section with assistance from the Stormwater Pollution Prevention Coordinator
	IL 6	IL6A: Audit the adequacy of the operations and maintenance programs for county-operated wastewater treatment systems to ensure that these systems are properly operated and maintained to prevent sanitary sewer overflows and spills into the storm sewer system	X	X	X	X	X	Public Works Utilities Division Supervisors
		IL6B: Track and trend sanitary sewer overflow events and implement corrective and preventive measures. Report performance annually.	X	X	X	X	X	
	IL 7	IL7A: Identify and map areas in the SWMP coverage area served by septic systems including county operated systems IL7B: Establish inspection/monitoring criteria for key areas IL7C: Inspect 25% of the county owned septic systems and septic systems in key areas per year IL7D: Achieve 100% removal of septic system discharges in areas of Los Osos subject to the RWQCB discharge prohibition (Target date beyond Permit Year 5)	X X	 X	 X	X X X	X X X	Department of Planning and Building Chief Building Official and General Services for county-owned septic systems (General Services County Parks Superintendent)
	IL 11	IL11A: Adopt and enforce a pet waste ordinance according to schedule. The ordinance adoption process includes public review.		X	X	X	X	Public Works Environmental Programs Division Stormwater Pollution Prevention Coordinator

	BMP ID	Measurable Goals and Outcomes	Implementation Timetable					County Implementers
			Permit Year					
			1	2	3	4	5	
Municipal Operations	MO 2	MO2A: Sweep County roads with storm drains, curb, and gutter in the NPDES permit coverage area on a quarterly basis or sooner in heavily soiled areas			X	X	X	Public Works Road Operations Superintendent
	MO 3	MO3A: Implement routine inspection and cleaning procedures and schedules for storm drain catch basins and other components of the storm sewer system that require cleaning on an ongoing basis.		X	X	X	X	Public Works Road Operations Superintendent with assistance from the Stormwater Pollution Prevention Coordinator
	MO 5	MO5A: Maintain the County road and bridge inventory MO5B: Develop and implement a road and bridge maintenance procedure manual that includes water quality protections including, but not limited to, proper stockpiling, erosion and sediment control BMPs, spill prevention and cleanup, saw cutting, paving and striping, equipment maintenance, proper fueling, and storm sewer system maintenance. MO5C: Train road and bridge maintenance employees to the manual	X	X X X	X X X	X X X	X X X	Public Works Road Operations Superintendent with assistance from the Stormwater Pollution Prevention Coordinator
	MO 6	MO6A: Use a self-inspection checklist to inspect county facilities for stormwater pollution prevention practices and procedures MO6B: Inspect facilities annually at a minimum to ensure ongoing compliance	X X	X X	X X	X X	X X	General Services County Parks Superintendent, Public Works with assistance from the Stormwater Pollution Prevention Coordinator
Construction	CON 1	CON1A: Revise existing grading ordinances to require additional specific construction site runoff control measures as required by the MS4 General Permit and Construction Stormwater General Permit including, but not limited to: use of good site planning, minimization of soil movement, erosion and sediment control BMPs, good housekeeping practices for recycling and disposal of discarded building materials, concrete truck washouts, chemicals, litter, and sanitary waste at construction sites. The ordinance revisions must include provisions for enforcement and penalties for noncompliance. CON1B: Enforce new ordinance requirements			X X	X X	X X	Department of Planning and Building Chief Enforcement Official

	BMP ID	Measurable Goals and Outcomes	Implementation Timetable					County Implementers
			Permit Year					
			1	2	3	4	5	
Construction	CON 3	CON3A: Create a procedure for inspecting construction site stormwater BMPs to ensure that they are being implemented and are properly maintained		X	X	X	X	Department of Planning and Building Chief Building Official and Public Works Development Services Engineer V
	CON 4	CON4A: Issue construction site education and outreach information with 100% of all construction permit applications for projects with one acre or more of land disturbance.	X	X	X	X	X	Department of Planning and Building Supervising Planner (Permit Center) and the Environmental Resource Specialist, and Public Works Development Services Engineer V
		CON4B: Include construction site runoff control public education and outreach information in the Stormwater Pollution Prevention Public Education and Outreach Program	X	X	X	X	X	
		CON4C: Post Information on County Website	X	X	X	X	X	
Post-Construction	PC 1	PC1A: Revise existing ordinances to require specific post-construction stormwater management controls including the Design Standards specified in Attachment 4 of the MS4 General Permit according to the schedule shown. The final ordinance/revisions will be adopted and enforcement provisions implemented by the end of permit year 3.			X	X	X	Department of Planning and Building Code Enforcement Chief Investigator
	PC 2	PC2A: Revise the CEQA initial study checklist by the end of permit year 3			X	X	X	Department of Planning and Building Environmental Resource Specialist
	PC 3	PC3A: Add post-construction stormwater management to development review beginning in Year 1	X	X	X	X	X	Planning and Building Planning Staff and Public Works Development Services Engineer V
	PC 4	PC4A: Inspect project sites one acre or more in size and smaller projects that are part of a common plan of development that is one acre or more in size for compliance with post-construction stormwater management controls as defined in the revised County Land Use Ordinances. Inspections must include a check to verify that post-construction runoff controls have been implemented and are being maintained			X	X	X	Department of Planning and Building Staff, Public Works Development Services Engineer V, and Road Operations Superintendent

	BMP ID	Measurable Goals and Outcomes	Implementation Timetable					County Implementers
			Permit Year					
			1	2	3	4	5	
Post-Construction	PC 4	PC4B: Inspect projects one acre or more in size for compliance with statewide General Construction Permit and SWPPP requirements for post-construction BMPs starting in permit year two (these inspections must occur until the County begins the PC4A inspections to ensure compliance). PC4C: Add a self-certification requirement to ensure long-term maintenance of post construction stormwater facilities. Self certification must ensure adequate long-term maintenance of all post-construction BMPs through funding commitments, covenants, maintenance agreements, right-of-entry for inspection, or other acceptable methods specified in the ordinance (See BMP PC1). For permit years 1-2, certification will be based on SWPPPs		X	X	X	X	Department of Planning and Building Staff, Public Works Development Services Engineer V, and Road Operations Superintendent
	PC 5	PC5A: Develop and publish the LID design manual. Compliance with Attachment 4 Design standards required in the ordinance described in BMP PC1 will be mandatory for all new projects one acre or more in size and smaller projects that are part of a larger common plan of development that is one acre or larger. The LID Design Manual is required to provide design specifications and guidance to help project proponents achieve compliance with the ordinance PC5B: Provide copies of the LID design manual on the County website and at the Permit Center		X X	 X	 X	 X	Dept. of Planning and Building Staff, Public Works Development Services Engineer V with assistance from the Stormwater Pollution Prevention Coordinator
	PC 7	PC7A: Implement the LID incentive program by Year 2		X	X	X	X	Planning and Building Environmental Resource Specialist with assistance from the Stormwater Pollution Prevention Coordinator
	PC 9	PC9A: Include policies for post-construction stormwater management in the new revision of the Conservation Element. Such policies are codified and enforced through County ordinances	X	X	X	X	X	Planning and Building Planning Staff with assistance from the Stormwater Pollution Prevention Coordinator

7. WASTELOAD ALLOCATION ATTAINMENT

The County has judiciously chosen BMPs that are believed to be the most effective and efficient strategies to reduce pollutant loading and meet the TMDL WLAs, as feasible.

The BMP selection and prioritization processes, which were described previously, were also based on an understanding of prioritized pollutant sources within the County MS4. However, given the fact that many of the BMPs are new activities in the County with little to no baseline effectiveness data, and given that they are mostly source control-type BMPs for which little performance monitoring data is published, it is difficult to quantitatively estimated expected performance (e.g., load reductions resulting from source control implementation) and to quantitatively demonstrate whether WLA allocations will be attained. Particularly in light of how minor the County's estimated contributions are to the total estimated pollutant loads in the TMDL watersheds, such a speculative task would likely not be worth the effort.

Therefore, the County recommends that at this early stage in the Permit term, an adaptive management process be implemented. Through this process the County will modify the WAAP BMPs based on internal tracking of effectiveness measures (which are reported to the Regional Board annually), and based on TMDL monitoring and progress reports provided by the Regional Board.

8. MONITORING PROGRAM

A common and quantitative means of assessing the overall effectiveness of BMPs is through water quality monitoring. Though chemical monitoring is not required by the County in the Permit, multiple Federal, State, and local agencies and non-profit organizations in San Luis Obispo County are currently involved in water quality activities in the County and Central Coast region, primarily relying on education, volunteer activities, and municipal operations to execute their programs. These groups have relatively well-developed programs that have proven successful in the past. A number of the groups monitor water quality as standard practice for their programs. The most effective means of monitoring water quality improvements will be achieved through coordination with this existing monitoring network. For a detailed list of existing programs and activities related to stormwater quality see Appendix B in the SWMP.

The County will monitor the individual BMPs discussed in this WAAP. According to the SWMP, monitoring the individual BMPs will include receiving public comments, keeping track of activities, and collecting any other information that may assist the County in evaluating the BMPs. The effectiveness of individual BMPs will be assessed on an annual basis in terms of progress made toward achieving the measurable goals. Construction site BMPs will be assessed real time as they are implemented and inspected at construction sites.

In addition, the individual TMDLs address monitoring issues specific to their respective pollutants of concern and watersheds. These monitoring requirements are summarized below.

8.1 San Luis Obispo Creek Nutrient TMDL

The County is not responsible for direct water quality monitoring. The City of San Luis Obispo is responsible for monitoring and reporting of WRF effluent and stream water quality under their NPDES MS4 Permit. Monitoring requirements for parties engaged in agricultural activities are consistent with, and rely upon, the Conditional Waiver of Waste Discharge Requirements for Discharges to Irrigated Lands (Conditional Waiver).

8.2 San Luis Obispo Creek Pathogen TMDL

The City of San Luis Obispo will continue to monitor 4 locations and Cal Poly will continue to monitor 2 locations in the San Luis Obispo Creek watershed. Sampling events occur quarterly, each consisting of 5 samples drawn in a 30-day time period within the sampling period.

The County is not responsible for monitoring because the highest fecal coliform concentrations have been observed on lands managed by the City and Cal Poly.

8.3 Morro Bay Pathogen TMDL

Monitoring efforts have been developed in coordination with the Morro Bay National Estuary Program (MBNEP) and the Friends of the Estuary Volunteer Monitoring Program along with existing monitoring performed by the California Department of Health Services (DHS). This monitoring plan identifies 6 sites within Morro Bay and 13 sites in the creeks and tributaries of Morro Bay Watershed that are to be monitored for pathogens. Monitoring is the responsibility of the Regional Board, the MBNEP Volunteer Program, and the DHS. The County is not responsible for water quality monitoring.

Monitoring will also include the tracking of implementation actions. This will be executed by the Regional Board with voluntary assistance from the County along with the MBNEP, California Men's Colony Wastewater Treatment Facility (CMC), City of Morro Bay, Community of Los Osos, and the DHS. As stated in the TMDL, Regional Board and MBNEP staff will review progress of implementation activities annually and will assess compliance every three years. When informed of this compliance status through Regional Board progress reports to the TMDL stakeholders, the County may adjust the bacteria BMPs in the Morro Bay watershed accordingly. It is assumed that

the Regional Board will consider information provided in the County's SWMP annual reports as part of this compliance assessment process.

8.4 Morro Bay Sediment TMDL

Sediment monitoring programs in the Morro Bay watershed have been developed in coordination with MBNEP and the Friends of the Estuary Volunteer Monitoring Program. The TMDL monitoring plan identifies 10 sites within the Morro Bay watershed that will be monitored for TMDL target compliance. These monitoring activities are the responsibility of the Regional Board and the MBNEP Volunteer Program. Monitoring will include 10 year rolling averages of residual pool volume, median diameter, percent of fine fines, percent of coarse fines, and tidal prism volume. The County is not responsible for sediment monitoring.

TMDL monitoring will also include the tracking of implementation actions by the Regional Board. The County will cooperatively participate with the Regional Board through the SWMP annual reporting process.

9. EFFECTIVENESS ASSESSMENT

Based on the maturity of the County's SWMP at this point, our control measures and BMPs are aimed at achieving outcome levels 1, 2 and 3 in accordance with the California Stormwater Quality Association's (CASQA's) Municipal Stormwater Program Effectiveness Assessment Guide (CASQA, 2007). These outcome levels highlight the desired results of effective program implementation including documenting activities, raising awareness, and changing behavior to control pollution at the source. Specific assessment methods that will be implemented to track the effectiveness of BMPs include:

- Confirmation of BMP implementation/completion
- Tabulation of actions, participants, or items associated with each BMP
- Representative surveys of a population used to understand the attitudes, beliefs, or knowledge of that group
- Inspections/Direct Observations, particularly for construction sites, industrial facilities, etc.
- Monitoring of water quality

Outcome levels 1-3 are inherently less quantifiable than the other outcome levels described in the CASQA manual. As the County's stormwater program matures, assessments will begin to shift to higher outcome levels that require more data and

discernable changes in loading and receiving water quality. It is recognized that the County's understanding of individual BMP effectiveness will in turn enable more accurate and meaningful measurable goals to be set in the future.

Table 5 summarizes the specific effectiveness measures for each BMP.

Table 5: Effectiveness Measures of Each BMP

	BMP ID	Effectiveness Measures
Public Education	PE 5	PE5A: Number and type of brochures distributed. PE5B: Brochures posted on County SWP2 website (Yes/No).
	PE 8	PE8A: Number of building permit applicants PE8B: Number and percentage of brochures distributed PE8C: Post brochures on web site (Yes/No)
	PE 10	PE10A: Track location, and grades receiving educational materials. PE10B: Books provided (Yes/No). PE10C: Sammy Kids Club materials provided (Yes/No). PE10D: Number and location of appearances.
	PE 12	PE12A: Number of hotels and tourist attractions reached. PE 12B: Number of programs supported. PE12C: Number of programs supported
	PE 18	PE18A: Number of education materials distributed and their locations. PE 18B: Pet Waste Ordinance adopted on schedule (Yes/No). Number and types of enforcement actions resulting from ordinance; compare year to year. PE18C: Number of pet waste management brochures distributed. PE18D: Number of brochures distributed and the location. PE18E: Brochures posted on web site (Yes/No); number of hits. PE18F: Number of people reached. PE18G: Track number and types of promotions. PE18H: Track number and types of promotions. Track number of spay/neuter. PE18I: Number of educational materials promoted. PE18J: Number of off leash dog parks at County parks.

	BMP ID	Effectiveness Measures
Illicit Discharge Detection and Elimination	IL 1	IL1A: Ordinance adopted (Yes/No). IL1B: Enforcement procedures developed (Yes/No). Annual training for inspectors (Yes/No). IL1C: Track number and types of violations.
	IL 3	IL3A: Illicit discharge dumping and construction site run-off added to existing hotline (Yes/No). IL3B: Track number and types of complaints, number and types of complaints resolved, and compare complaints and requests from year to year. IL3C: Track number and types of complaints, number and types of complaints resolved, and compare complaints and requests from year to year. IL3D: Track number and types of complaints, number and types of complaints resolved, and compare complaints and requests from year to year.
	IL 4	IL4A: Procedure and checklist developed (Yes/No). IL4B: Number of inspections conducted. IL4C: Enforcement and penalties adopted (Yes/No). IL4D: Number and percentage of inspectors trained to detect and report illicit discharges. IL4E: Number and percentage of inspectors trained to detect and report illicit discharges. IL4F: Established a system of enforcement and penalties (Yes/No). IL4G: Number and type of violations and the corrective actions taken.
	IL 6	IL6A: Annual audit of County facilities self-inspection program (Yes/No). IL6B: Number of sewer overflow events.
	IL 7	IL7A: Identified and mapped coverage area septic systems (Yes/No). IL7B: Established inspection/monitoring criteria for key areas (Yes/No). IL7C: Inspected 25% of county owned septic systems annually (Yes/No). IL7D: Summarize Los Osos Sewer Project Status (Yes/No). Percentage of septic system discharges removed from areas of Los Osos subject to the RWQCB discharge prohibition.
	IL 11	IL11A: Ordinance adopted (Yes/No).
Municipal Operations	MO 2	MO2A: Amount of material collected and miles of streets swept. Compare data to adjust coverage and scheduling.
	MO 3	MO3A: Routine inspection and procedures implemented (Yes/No). Number of storm drains cleaned per year and frequency. Update schedule as necessary.
	MO 5	MO5A: Inventory created (Yes/No). MO5B: Manual developed (Yes/No). MO5C: Number and percentage of employees trained. Track number of pollutant discharges during maintenance operations year to year.
	MO 6	MO6A: Self inspection checklist created (Yes/No). MO6B: Track number and percentage of county facilities inspected. Track number and type of noncompliance conditions and the correction actions.

	BMP ID	Effectiveness Measures
Construction	CON 1	CON1A: Revision and approval of county Title 22 and 23 Ordinances (Yes/No). CON1B: Number of construction sites subject to the construction General Permit, compared to the number of sites inspected.
	CON 3	CON3A: Inspection procedures implemented (Yes/No).
	CON 4	CON4A: Education brochure given with each building permit (Yes/No). Compare compliant sites to non-compliant sites year to year. CON4B: Number of stormwater newsletters distributed to development community and construction industry. Number of public education and outreach presentations. CON4C: Posted on web site (Yes/No).
Post-Construction	PC 1	PC1A: Revised Existing Ordinances to include post-construction controls (Yes/No)
	PC 2	PC2A: CEQA checklist revised (Yes/No)
	PC 3	PC3A: Number and percentage of project referrals reviewed for LID possibility. Develop sign-off inspection checklist specifically for post construction stormwater management (Yes/No)
	PC 4	PC4A: Track number of post construction inspections. Track percentage of sites in compliance with maintenance inspection program PC4B: Self certification program implemented (Yes/No)
	PC 5	PC5A: LID Manual Created (Yes/No) PC5B: LID Manual posted on website (Yes/No). LID Manual available at Permit Center (Yes/No)
	PC 7	PC7A: LID incentive program implemented (Yes/No)
	PC 9	PC9A: Post construction stormwater management included in Conservation Element (Yes/No)

10. MODIFICATIONS

If the effectiveness assessment highlights any BMP as ineffective, the County will re-evaluate the BMP, including its implementation schedule and compliance, and adjust it accordingly. The County will consider information provided by responsible parties, including monitoring data and percent of the BMP completed. If necessary, additional BMPs will be implemented based on gathered data to support attainment of the TMDL WLAs.

11. REPORTING

In accordance with the SWMP, the County must submit annual reports to the Regional Board by June 8th of each year. This report will summarize the activities performed for the reporting period (March 23 - March 22). Each report will include:

- The status of compliance with Permit conditions;
- An assessment of the appropriateness and effectiveness of the identified BMPs;

- The status of the identified measurable goals;
- The results of information collected and analyzed, including monitoring data, if any, during the reporting period;
- A summary of the stormwater activities the Permittee plans to undertake during the next reporting cycle, and;
- A summary of any meetings or other correspondence that the County has had with Regional Board staff and other stakeholders regarding progress on the TMDLs.

12. COORDINATION

The County will continue its cooperation with Federal, State, and local agencies and non-profit organizations to implement this Wasteload Allocation Attainment Plan. Monitoring efforts, which are an extensive part of the WAAP, will be carried out by the City of San Luis Obispo and Cal Poly, along with agencies such as the Morro Bay Shellfish Technical Advisory Committee, MBNEP, and DHS. The County will collaborate with these agencies to gather monitoring data in an efficient matter so as to track the effectiveness of each BMP in attaining TMDL objectives. As necessary, public meetings will be held with agencies, stakeholders, and the public to ensure that progress is being made toward WAAP objectives.

A meeting was held with the County, Cal Poly, the City of San Luis Obispo, the City of Morro Bay, and Geosyntec Consultants on March 16, 2010 to coordinate on development of TMDL WAAPs. A follow-up meeting may be held, as necessary, to discuss progress on TMDL efforts and WAAP implementation later in 2010.

An extensive listing of all non-profit organizations and agencies involved in the stormwater management program, along with the programs they are specifically involved with and the BMP control measures that apply are listed in Appendix B of the SWMP. The County anticipates cooperating with many of these agencies throughout SWMP implementation.

13. REFERENCES

California Polytechnic State University and University of Washington, 2002. Identifying the Sources of Escherichia coli Contamination to the Shellfish Growing Areas of the Morro Bay Estuary. March 15, 2002.

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